CUBIT Capability Proposal

Technical Area Geometry, Meshing, Infrastructure, GUI, Graphics, etc..	**Technical Lead** Cubit Developer in charge of technical area
Meshing	Matt Staten

MRD Description
Describe the capability in terms of how a user would see it.

Fix Hex refinement

SRS Description
What needs to be done by Cubit developers to implement this capability? Break the tasks into steps if applicable. (Steps should be on the order of 2 man-weeks or more)

Hex refinement was put in by BYU students and never should have been released to customers. BYU students just do not have the skills to make something ready for production. Now our customers are trying to use it and it reflects very poorly on Cubit. We currently have numerous bugs opened on hex refinement, but nobody has time to fix them. In addition, fixing hex refinement one-bug at a time is only going to make marginal improvement. We need to take a global look at hex refinement and the entire algorithm being used. Since it was originally implemented by students, if a seasoned developer worked on it, they could very likely improve the robustness, speed and memory requirements of hex refinement by orders of magnitude.

Justification
Describe why this is important and what impact it will have if it is implemented. (or not implemented).

Recently, Steve, Ted, and I agreed that the procedure to integrate BYU technology is to always have a more seasoned employee take it after the BYU student is finished and turn it into a viable working feature in Cubit. Mike Stephenson did it for Mike Scott's sweeper. We need to do the same for hex refinement. Hex refinement is a very valuable technology. It allows users to use much coarser meshes than would otherwise be possible. We need to spend the time to turn it into a real tool that customers can use.

Resources Who will work on this	**Time estimate** How much time will it take in man-weeks	**Targeted Release** 10.2 (August 06), 10.3 (March 2007), 10.4 (August 2007), Future (beyond FY07)
??? Maybe Mike Stephenson or Mike Borden, or someone at ETI	16-24 weeks	

Submitted By:	**Date:**
Matt Staten	5/3/2006